

SYSTEMS INTEGRATION MARKETS EUROPE

1992 - 1997

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# SYSTEMS INTEGRATION MARKETS

## EUROPE, 1992-1997

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### **Systems Integration Programme - Europe**

*Systems Integration Markets*  
*Europe, 1992-1997*

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## **Abstract**

The systems integration market has remained relatively immune to the downturn affecting the overall information services market. It is also one of the key markets targeted by the systems vendors as these organisations seek to shift their emphasis from products to services. Accordingly, it will increasingly become the battleground between the major professional services companies and the systems vendors, with both types of organisations aiming to become "business" rather than "technical" solutions providers.

This report provides forecasts for the European systems integration market by country over the period 1992 to 1997. It provides industry sector forecasts and identifies the leading vendors in each country. The impact of trends such as those ranging from downsizing to open systems are discussed, as are changes in user buying patterns.



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# **I**

## **Introduction**

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### **A**

#### **Purpose**

Systems integration is one of the fastest growing areas of the European information services market. Although once the natural preserve of the indigenous professional services vendors, systems integration is increasingly targeted by the major systems vendors as they seek to respond to changes in the marketplace.

Their future success in this market will largely determine whether or not these vendors remain a major influence in the information systems (IS) market or whether they effectively lose control of their major accounts.

This report monitors trends in this important market, including the following:

- changing purchasing patterns
- the impact of the move towards open systems
- the key industry sectors.

It also provides market forecasts and identifies the leading vendors in each country market.

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**B**

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**Scope and Methodology**

Systems integration is a business offering that provides a solution to a complex information system, networking or automation requirement through custom selection and implementation of a variety of information system products and services. A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price.

The systems integrator will perform, or manage others who perform, most or all of the following functions:

- Programmed management, including subcontractor management
- Needs analysis
- Specification development
- Conceptual and detailed systems design and architecture
- Systems component selection, modification, integration and customisation
- Custom software design and development
- Custom hardware design and development
- Systems implementation including testing, conversion and post-implementation evaluation and tuning
- Life cycle support, including the following:
  - Systems documentations and user training
  - Systems integration during development
  - Systems maintenance.

The systems integration market is divided into five subsidies:

- Equipment
- Systems software
- Applications software
- Professional services
- Other.

The market analysis provided in this report covers the whole of Europe.

The research that contributed to this study was derived from two main sources:

- A series of in-depth interviews with systems integration vendors in Europe
- INPUT's continuous annual analysis of the computer software and services market, which includes interviews with both vendors and users.

Additionally, INPUT's extensive library and database of information relating to the software and services industry was used.

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## C

### Report Structure

The remaining chapters of this report are structured in the following way:

- Chapter II is an executive overview providing a concise summary of the salient points of the report.
- Chapter III provides an overview of the European systems integration market including the overall European forecast and competitive analysis.
- Chapter IV contains the market forecast and identification of leading vendors for each individual country market.
- The appendices to the report contain a detailed database of each country market forecast in local currency, in U.S. dollars and in ECU and a reconciliation of the differences between this forecast and previous INPUT forecasts for the systems integration market.

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## D

### Related Reports

*Impact of Downsizing on Systems Integration, Europe 1992*

*Systems Integration Opportunities in Re-engineering, Europe, 1992*

*Methods for Successful Systems Integration Projects, Europe, 1992*

*Systems Integration Vendor Analysis, Europe, 1992.*



## **II Executive Overview**

### **A**

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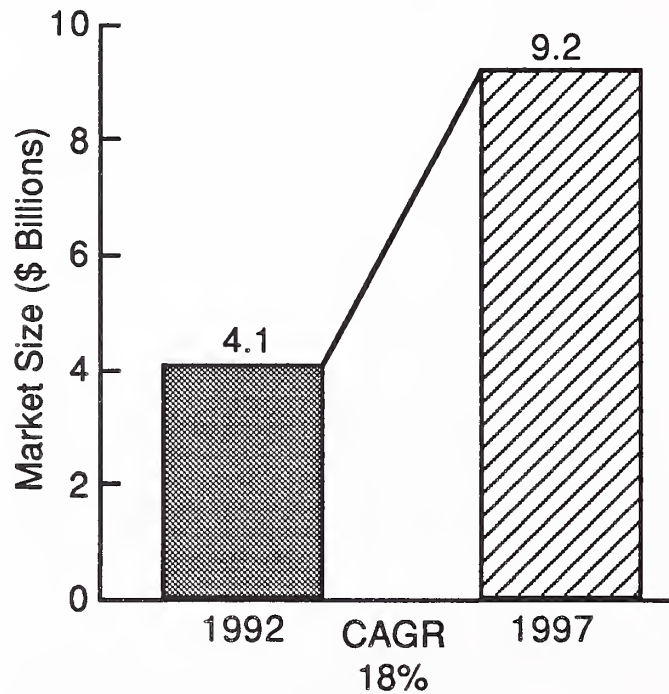
#### **Systems Integration Defies the Recession**

Whereas European professional services revenues, particularly in areas such as custom software development and education and training, exhibited unprecedentedly low growth (9%) in 1991, the systems integration market managed to defy the recession with growth of 17%.

This trend is forecast to continue in the future with systems integration growth of 18% per annum over the next five years (see Exhibit II-I). This is double the rate forecast for professional services.

EXHIBIT II-I

### Systems Integration Market Europe, 1992-1997



This growth is being fuelled by the following:

- increased senior executive and end user management involvement in IS strategies and procurement
- the increasing complexity of multivendor IS solutions
- the adoption of open systems and client/server architectures
- the use of new technologies to drive business process re-engineering.

Senior executives in Europe remain concerned about the contribution that IS systems have made to their businesses in the past. In endeavouring to achieve better "value for money" in the future, senior executives are seeking reduced IS expenditure and increased business justification for projects. This increased business justification is being tackled by establishing senior executive steering groups and by transferring control of IS to end-user management. These measures are ensuring that a greater proportion of major project IS development activity is being carried out by external systems integrators as opposed to in-house IS departments.

Organisations are also turning to business process re-engineering - the redesign of activities within the value chain - to improve their own effectiveness and provide their organisations with a competitive advantage. Where major business process re-engineering is required, probably accompanied by a considerable change management challenge, organisations are likely to turn to external consultants for assistance. Vendors who place a strong emphasis on such skills include Andersen Consulting, CC Index, and Gemini Consulting.

New technologies such as imaging also have a key role to play in facilitating business process re-engineering. Since the in-house IS department is likely to have had limited exposure to the application of these technologies, assistance is likely to be sought from external vendors.

External assistance is also frequently required where users are adopting open systems and client/server architectures, especially if these are to be integrated with existing systems still based on a range of proprietary equipment.

In addition, the systems integration market is being stimulated by the vendors. All of the leading equipment manufacturers such as IBM, Digital, Groupe Bull, Siemens Nixdorf and ICL are strongly targeting systems integration. They are doing so in response to the increasing commoditisation of their equipment offerings and reduced customer loyalty.

Accordingly, they are moving to higher margin services businesses which can also be used as low-competition channels for their equipment.

Their major competitors - the professional services vendors such as Cap Gemini Sogeti and Sema Group - can also perceive a shift in the market, as end users and senior executives, rather than the in-house IS department, become the major source of business. This necessitates these organisations affecting a change of image from "gifted technicians" to "business consultants". Many vendors are endeavouring to achieve this change in emphasis by developing management consulting capabilities such as those found within Andersen Consulting, Gemini Consulting and CC Index.

## B

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### Open Systems Begin to Dominate the Market

As new management philosophies and new technologies become increasingly accepted, the European systems integration market is evolving according to the characteristics listed in Exhibit II-2.

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EXHIBIT II-2

#### Major Trends Systems Integration, Europe

- Growth in importance of end-user management
- Network integration opportunities increase
- Open systems account for majority of projects

Firstly the majority of systems integration projects are now based around open systems equipment. Projects based predominantly around UNIX mid-range systems are estimated to account for over a third of systems integration activity, while PC LAN-based projects account for approximately a quarter of the market.

These proportions can be expected to increase in the future, though mainframe-based projects will remain an important component of the systems integration market where high throughput OLTP systems are required. Projects based around proprietary mid-range systems are now a minor part of the systems integration market, with only the IBM AS/400 retaining any real credibility in the marketplace.

With the increasing adoption of distributed systems and demand for interoperability, the market for network integration projects is continuing to grow rapidly. In 1991, it is estimated that network integration projects accounted for more than a quarter of systems integration activity. The telecommunications-oriented vendors, such as BT Customer Systems, specialise in this type of activity.



The other major trend is the growth in importance of senior executives and end-user departmental management in systems integration project procurement. Although this trend is a major stimulant for the systems integration market, it also presents challenges for the majority of vendors who continue to be perceived as technologists rather than business advisors. To meet this challenge, vendors are establishing their own management consultancy capabilities and are seeking to transform the skills of their major account managers.

The nature of the systems integration task is also changing. Exhibit II-3 lists the growth forecast for each of the major project components.

## EXHIBIT II-3

### Systems Integration by Subsector Europe, 1992-1997

Subsector	Market Size		
	1992 (\$M)	1992-1997 CAGR (%)	1997 (\$M)
Equipment	1,550	14	3,000
Professional Services	2,150	20	5,250
Software Products	300	22	800
Other Services	100	15	200
<b>Total</b>	<b>4,100</b>	<b>18</b>	<b>9,250</b>

Firstly, the nature of the professional services component is changing with greater emphasis being placed on strategic business consulting, such as business process redesign and change management. At the same time, the emphasis on bespoke systems development is decreasing. This is being brought about by the desire of users to build systems quickly and to build flexibility into the overall design. These objectives are more likely to be achieved by using existing kernels or application software products where possible rather than developing custom software.

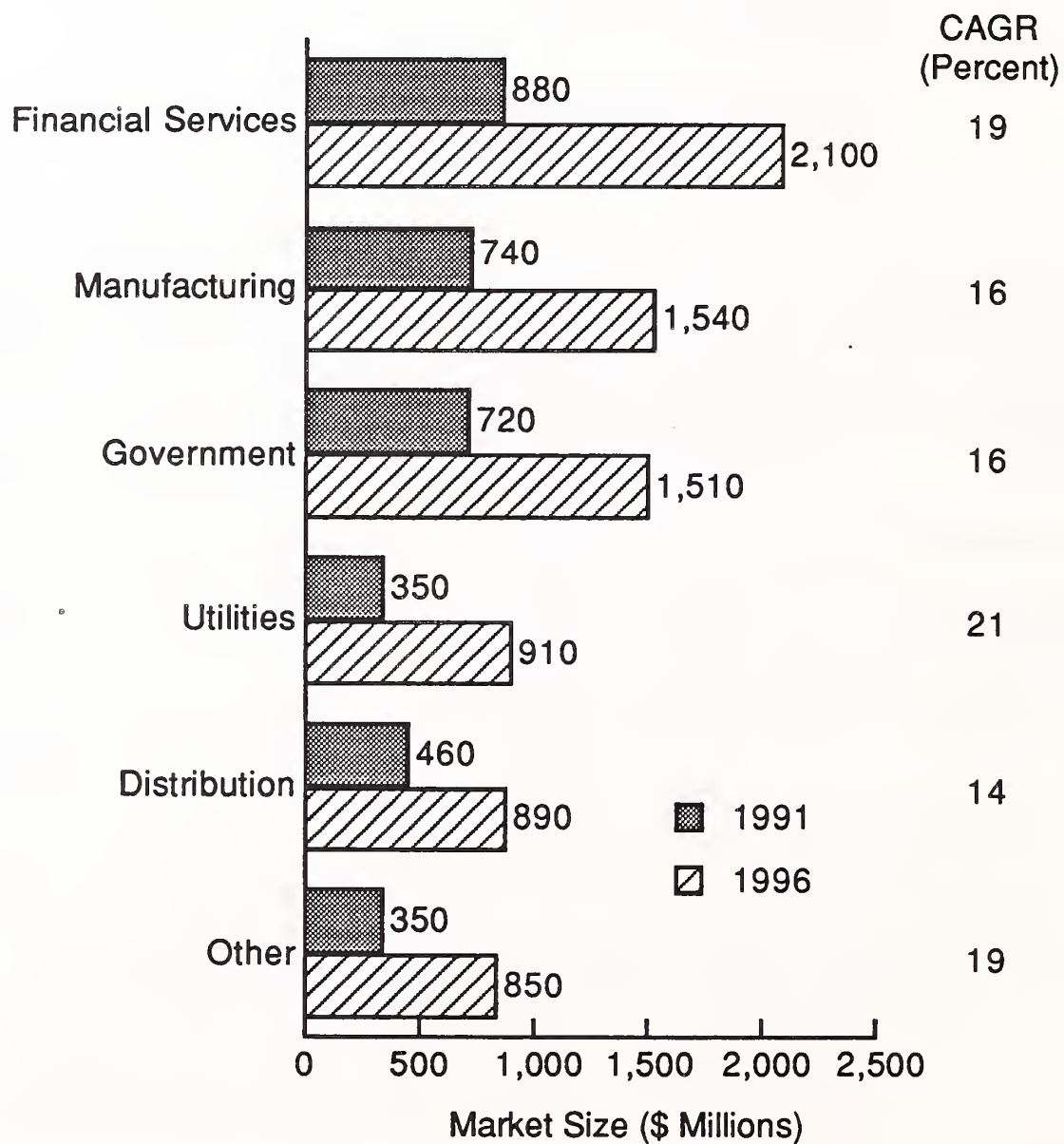
## C

## Major Opportunities in Banking and Finance

Exhibit II-4 provides a forecast for the systems integration market by industry sector.

EXHIBIT II-4

### Industry Sector Growth Systems Integration, Europe



The banking and finance sector has been the most active for systems integration vendors in recent years, driven by considerable redevelopment of systems within the European stock exchanges and considerable activity in realigning with these changes the investment community's dealing systems. This high level of activity is set to continue with Logica engaged in a major design study for the Swiss Stock Exchange and the London Stock Exchange facing the threat of a rival information provider.

There are also increasing pressures on the retail banks to reduce their costs while simultaneously competing through the delivery of higher customer service levels. This requires the banks to become more innovative in their use of IS systems and also to find ways of integrating their departmental "islands of automation". In addition, the banks in Eastern Europe are in the process of developing their own modern IS infrastructures, which presents a major opportunity for systems integration vendors.

The distribution sector was the second largest after banking and finance during 1991. The retail subsector was particularly active because of the pressures for improved merchandise planning and fast response distribution systems, leading to reduced stockholdings. Retailers still need to achieve tighter control of their supply chains, and transportation systems are forecast to show above average growth. The distribution sector is, however, expected to grow less rapidly than the other major sectors over the next five years.

The discrete manufacturing sector is also expected to exhibit comparatively low systems integration growth. However, major projects will still occur driven by the sector's needs to consolidate information from separate manufacturing units at the enterprise level and to continue to achieve higher levels of integration between production planning systems and shop-floor activities. Although still a smaller market in systems integration revenues, the process manufacturing sector will exhibit higher growth as, driven by the need for continuing cost reduction, it moves to higher levels of automation.

Opportunities in the defence sector will reflect European governments' perceived need for greater flexibility of response to an increasingly indeterminate threat. Above all, this calls for improved communication and decision making support. However, the defence sector is forecast to achieve the lowest level of systems integration growth of any of the major sectors over the next five years as European governments endeavour to cut back their defence expenditure.

As a result, it is expected that the defence sector will be replaced in the "top five sectors" over the next five years by civil government. The European community can be increasingly expected to drive public sector systems integration projects, as moves to standardise and integrate the systems of the various national bodies take place. Current examples of this are the tracking system being developed by Systemhouse International for a consortium of European Postal Administrations and the EC Network Project - a pilot project linking government departments across member states.

Finally the utilities will continue to be one of the fastest growing segments of the systems integration market with considerable activity across Europe.

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## D

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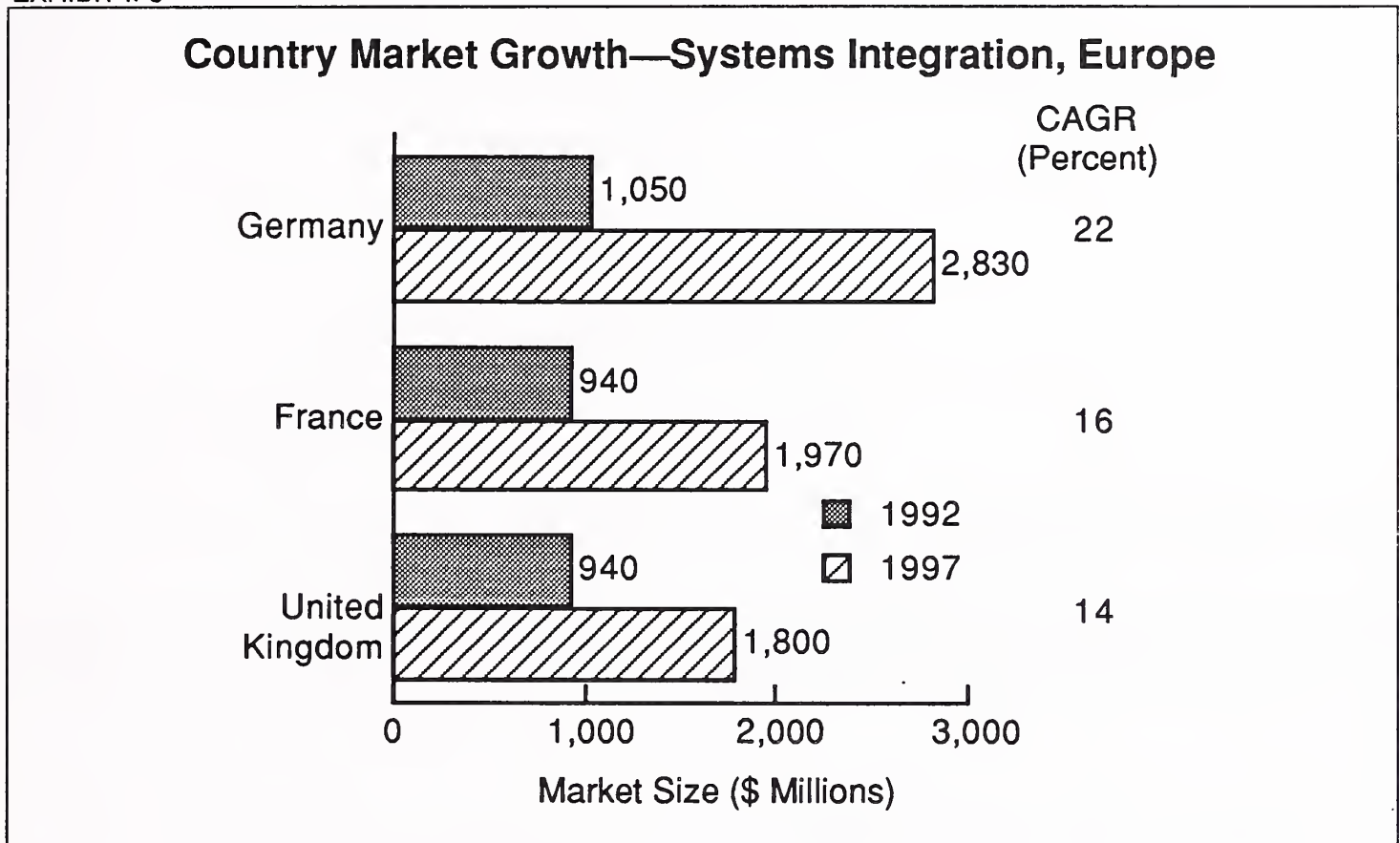
### Vendors Target Germany

Although the systems integration market has largely resisted the impact of the recession, the effects of the recession can still be seen in the relative market growth rates for systems integration in individual countries.



Exhibit II-5 provides the systems integration market forecast for the three major countries.

EXHIBIT II-5



Germany is forecast to show the highest rate of systems integration growth at 22%. Recognising the potential of the region, vendors have increasingly targeted the German market over the past twelve months.

This increased activity is not limited to Cap Gemini Sogeti's partnership with Debis Systemhaus. The systems vendors are also placing great emphasis on the German systems integration market. For example, Hewlett-Packard has achieved its most notable successes here, and Groupe Bull has a major new business systems integration business unit based in Germany. In addition, other systems vendors such as Unisys and ICL have won large contracts in Germany.

So far Andersen Consulting has been less successful in Germany than in the United Kingdom, France, Italy and Spain, but it expects increasing competitive pressure on German companies to increase the demand for its services there over the next few years.

While Sema Group may be having difficulties with the I-Line product range from ADV/Orga, the company's German systems integration activities are reported to be very healthy. The acquisition of ADV/Orga was initially intended to assist the Sema Group in targeting the manufacturing sector with its systems integration services.

The leading systems integration vendors in Europe are listed in Exhibit II-6

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EXHIBIT II-6

**Leading Vendors, 1991  
Systems Integration, Europe**

Company	Revenues (\$M)
IBM	600
Cap Gemini Sogeti	375
Andersen Consulting	350
Sema Group	140
Siemens Nixdorf	115

The leading professional services companies, such as Cap Gemini Sogeti, Andersen Consulting and the Sema Group, are continually facing increased pressure from the systems vendors. While IBM has targeted the European systems integration market for a number of years, Digital and Hewlett-Packard are comparatively recent entrants to the market. The major systems vendors are expected to capture market share from the professional services vendors because of their status as large, financially stable, multinational companies.

Both the equipment vendors and the majority of the professional services vendors face similar challenges in incorporating high levels of business knowledge into their account managers and developing the necessary expertise to offer credible business process re-engineering and change management services.

### III Distributed Systems - A Major Influence on the Systems Integration Market

#### A

#### Network Integration Grows in Importance

The industry trends of downsizing and adoption of distributed systems are having a major impact on the systems integration market.

In particular, the proportion of systems integration projects concerned with network integration continues to grow, and the majority of systems integration projects are now based around non-proprietary systems.

Exhibit III-1 provides a breakdown between systems integration projects concerned primarily with network integration and those concerned primarily with business solutions.

EXHIBIT III-1

#### Market Segmentation, 1991 Systems Integration, Europe

Market Segment	Share of Total Market (%)	Value (\$M)
Networking/ Infrastructure Development	26	900
Application/ Business Solutions	74	2,600
<b>TOTAL</b>	<b>100</b>	<b>3,500</b>

The European PTTs are particularly active in network integration. One example is BT's involvement with a major network integration project for the Department of Social Security in the United Kingdom. The European systems vendors such as Siemens Nixdorf Informationssysteme (SNI), Groupe Bull, ICL and Olivetti also have a strong presence in network integration. This is because these vendors are now firmly committed to strategies based around migrating users onto their UNIX-based equipment. The major network integration project in Europe at present is the European Community's project to link the public administration offices of 12 member states. The areas covered include education, employment, social security, and customs control. SNI, Groupe Bull, and Olivetti are co-operating on a pilot project for this scheme, which will be completed in 1993. Bids for the final project will follow.

Overall, the importance of network integration in the systems integration market will continue to grow, with strong competition emerging between the systems vendors and the PTTs. In addition to the European PTTs, U.S. vendors such as AT&T will increasingly target the European network integration market.

Downsizing is also having an impact on the types of equipment on which systems integration projects are being based. A breakdown of systems integration projects by principal equipment type is shown in Exhibit III-2.

EXHIBIT III-2

### Systems Integration Projects by Equipment Type, Europe

Equipment Type	1991 Proportion of Contracts (%)	1991 Value (\$M)	1997 Value (\$M)	CAGR 1991-1997 (%)
Mainframe	29	1,000	1,850	11
Proprietary mid-range	14	500	900	10
UNIX-based mid-range	34	1,200	3,700	21
PC or PC/LAN	23	800	2,800	23
<b>TOTAL</b>	<b>100</b>	<b>3,500</b>	<b>9,250</b>	<b>18</b>



It is estimated that open-systems-related projects now account for over 50% of all systems integration projects, with personal-computer-based systems accounting for a higher proportion of projects than proprietary mid-range systems.

For example, the new Elektronische Boerse Schweiz system for the Swiss Stock Exchange is currently being designed around UNIX and client/server architecture. The design phase is being conducted by Logica and the overall project has an estimated value of SF70 million. Similarly, another organisation in the finance sector - The Bank of England - has announced that it is replacing its mainframe systems with new systems based on PC LANs.

However, there is still a widespread belief that mainframes are required to successfully implement large OLTP systems, and that mainframes retain a key role as high-power servers. The equipment ranges which have been most affected by the recent developments in the market are the proprietary mid-range systems, where only the IBM AS/400 retains its credibility in the marketplace.

## B

### "End-User Management" Assumes Key Role

Another development in the systems integration market is the growing importance of senior executives and end-user departmental managers in the purchasing process.

The relative influences in the systems integration market of IS management and end-user management are estimated in Exhibit III-3.

EXHIBIT III-3

#### Major Purchasing Influence, 1991 Systems Integration, Europe

Major Purchasing Influence	Share of Total Market (%)	Value (\$M)
IS director or managers	40	1,400
CEO or end-user management	60	2,100
<b>TOTAL</b>	<b>100</b>	<b>3,500</b>



Although the breakdown shown in the exhibit is similar to that published last year, the influence of senior executives and end-user management in the purchasing process is continuing to increase relative to that of the IS professionals.

Senior executives in Europe remain unconvinced of the ability of information systems to deliver "value for money". By "value for money", senior executives mean a real benefit to their organisation in terms of competitive advantage relative to other organisations in their industry. There are two approaches being taken to deliver "value for money", both of which increase the influence of "end users" in the purchasing process.

The first of these approaches is to transfer responsibility for information systems to business unit or departmental managers. This approach has the advantage of ensuring that IS projects are only undertaken when the "business owner" is convinced of their merit. However, this approach can lead to "islands of automation" and difficulties in integrating the systems needs of the overall organisation.

The second approach is for senior management steering committees to drive the use of information systems throughout the organisation. This provides senior executives with much closer involvement in influencing vendor selection than has historically been the case, where such decisions have been delegated to the IS department.

However, the influence of the various parties will also depend on the nature of the project. While business solution projects, and especially business process re-engineering projects, will primarily be the concern of senior executives and end-user management, so network integration projects will continue to be co-ordinated largely by the IS department.

A breakdown of systems integration projects by project value is listed in Exhibit III-4.

## EXHIBIT III-4

### Systems Integration Projects by Value, Europe, 1991

Project Value (\$M)	Proportion of Total (%)	Value (\$M)
2 < 5	35	1,225
5 < 10	27	950
10 < 25	17	600
25 <	21	725
<b>TOTAL</b>	<b>100</b>	<b>3,500</b>

Large projects, with values over \$25 million, continue to form an important sector of the market. Such projects are especially prevalent in the public and finance sectors. Examples of major projects include the following:

- The Swiss Stock Exchange project
- CHOTS for the U.K. Ministry of Defence
- A telecontrol system for EDF
- A branch banking system for Slovenska Statna Sponitelna (Czechoslovakia).

## C

### High Growth in Germany

Overall, the systems integration market is expected to remain comparatively resilient to the recession. The systems integration market in Europe is forecast to grow at 18% per annum over the next five years compared to 11% for the European software and services market as a whole.

However, the market is expected to be influenced by the economic environment within individual countries. The European systems integration market forecast by country is listed in Exhibit III-5.

## EXHIBIT III-5

### Systems Integration Country Markets, Europe, 1992-1997

Country	User Expenditures (\$m)		
	1992	1997	1992-1997 CAGR (%)
France	940	1,970	16
Germany	1,050	2,830	22
United Kingdom	940	1,800	14
Italy	370	830	17
Sweden	75	145	14
Denmark	50	90	12
Norway	50	95	14
Finland	20	34	12
Netherlands	176	400	18
Belgium	135	312	18
Switzerland	85	182	16
Austria	45	93	16
Spain	117	267	18
Ireland	10	20	16
Portugal	4	12	24
Greece	8	20	20
Eastern Europe	10	150	72
<b>TOTAL (Rounded)</b>	<b>4,100</b>	<b>9,250</b>	<b>18</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

Although systems integration has remained, and is expected to continue to remain, buoyant compared with, say, the professional services sector, the severity of the recession in Europe has led to the postponement of large projects.

The impact of adverse economic conditions on the systems integration market is forecast to be most marked in the United Kingdom and Scandinavia. The Scandinavian economy is particularly affected by its loss of trade with Eastern Europe.

On the other hand, the German economy has so far been least affected by recession and so is forecast to continue to exhibit high systems integration growth. In addition, the market in Benelux is being stimulated by the advent of European Community projects such as the EC Network project referred to earlier.

Eastern Europe is also forecast to show high growth. In particular, vendors such as Unisys and NCR have already received major orders as the countries of Eastern Europe assemble banking infrastructures. These countries are keen to adopt the latest technology and are typically implementing client/server-based projects such as the system being developed for Slovenska Statná Sponitelna in Czechoslovakia.

**D****Banking and Finance - The Principal Opportunity**

Overall, the banking and finance sector forms the major component of the systems integration market in Europe. A breakdown of the European systems integration market by industry sector is shown in Exhibit III-6.

EXHIBIT III-6

**Systems Integration Industry Sector Analysis,  
Europe 1991**

Sector	Value (\$M)	Proportion of Market (%)
Financial Services	880	25
- Banking & Finance	630	18
- Insurance	250	7
Manufacturing	740	21
- Process	320	9
- Discrete	420	12
Distribution	460	13
Utilities	350	10
Government	720	21
- Civil	330	10
- Defence	390	11
Other	350	10
<b>TOTAL</b>	<b>3,500</b>	<b>100</b>

Percents are rounded.



Exhibit III-7 provides a growth forecast for each of these sectors over the period 1991 to 1996.

## EXHIBIT III-7

### Industry Sector Growth Systems Integration, Europe

Sector	Market Size		
	1991 (\$M)	1996 (\$M)	1991-1996 CAGR (%)
Financial Services	880	2,100	19
- Banking & Finance	630	1,570	20
- Insurance	250	530	16
Manufacturing	740	1,540	16
- Process	320	730	18
- Discrete	420	810	14
Distribution	460	890	14
Utilities	350	910	21
Government	720	1,510	16
- Civil	330	820	20
- Defence	390	690	12
Other	350	850	19
<b>TOTAL</b>	<b>3,500</b>	<b>7,800</b>	<b>17</b>

The leading five sectors in 1991 are estimated to be as follows:

- Banking and Finance
- Distribution
- Discrete Manufacturing
- Defence
- Utilities.

Systems integration within the banking and finance sector is forecast to continue to expand rapidly. Contracts will involve both major banking systems and systems for the various national stock exchanges. Logica is currently developing the new design for the Swiss Bank exchange, and considerable banking activity is arising in Eastern Europe as these countries seek to establish their own modern banking infrastructures.

The banking sector throughout Europe is facing a crisis and needs to adopt information systems in a creative manner to assist in improving its customer service levels and build customer loyalty.

Profitability is also a major issue for the European insurance companies. However, so far they have been slow to adopt systems integration services. Nevertheless, there remains considerable potential for insurance companies to use new technologies such as imaging and work flow procedures to transform their businesses' customer responsiveness.

The distribution sector is best evaluated in terms of its two components: retail and wholesale. The retail sector continues to show considerable potential for systems integration projects, particularly in areas such as network integration and demand forecasting systems. Transportation is itself a major growth area within the systems integration market. On the other hand, growth in the wholesale sector is comparatively subdued.

The discrete manufacturing sector has been severely impacted by the recession across Europe, and companies are finding it difficult to justify major IS projects. Higher growth is expected in the process manufacturing sector where it is typically simpler to move production plants to full computer-integrated processing. Projects of this type are easier to justify and offer real cost savings.

The utilities sector has been very active across Europe for the past few years, and a high level of activity is expected to continue for the foreseeable future. In the electricity sector this growth has been driven by major power station automation projects as well as the renewal of these utilities' commercial systems to meet the needs of privatisation in the United Kingdom. There have also been a number of major telemetry and digital mapping projects in the water and gas distribution sectors.

As in the case of the distribution sector, the government sector needs to be subdivided into two areas of widely differing potential: civil government and defence. Civil government continues to show considerable potential, for example, the European Community initiated projects. On the other hand, there is expected to be a decline in defence-related IS expenditure as European governments endeavour to reduce their defence-related expenditures.

## E

### IBM Consolidates Its Position

Exhibit III-8 identifies the leading systems integration vendors in Europe.

#### EXHIBIT III-8

### Leading Systems Integration Vendors, Europe, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (U.S. \$)
1	IBM	17	600
2	Cap Gemini Sogeti	11	375
3	Andersen Consulting	10	350
4	Sema Group	4	140
5	Siemens Nixdorf	3	115
6	Bull	3	110
7	Logica	3	105
8	EDS	3	100
9	ICL	3	95
10	BT Customer Systems	2	85
	Total Listed	59	2,075
	Total Market	100	3,500

Percents are rounded.

IBM, which has established a major presence in the banking and finance sector across Europe, is the clear leader in the European systems integration market. IBM in general has good coverage of each of the major sectors; the major area where the company is comparatively weak is in the public sector. This particularly applies to national government, which still tends to favour European vendors.

In contrast, the major strengths of the European systems vendors such as Siemens Nixdorf, Groupe Bull, and ICL lie in their successes with national government.

Andersen Consulting has had by its own standards a mixed year, losing the Swiss Stock Exchange project to Logica and a contract from the United Kingdom Department of Social Security to Sema Group. Sema Group itself claims to have had a successful year after placing more emphasis on its systems integration activities.

EDS now appears in the leading ten systems integration vendors in Europe, by virtue of its acquisition of SD-Scicon. Digital is in the process of establishing systems integration as the basis of its approach to large accounts and is currently in eleventh position in Europe. Digital can be expected to move up the list of leading vendors as the company increases its emphasis on consultative selling.

## IV Country Market Analysis

### A France - Cap Gemini Sogeti Maintains Market Leadership

Growth in the systems integration market in France has slowed further during 1991 under the influence of the recession, and the forecast for the period 1992 to 1997 has been reduced to 16% as shown in Exhibit IV-1.

EXHIBIT IV-1

#### Systems Integration Market, France, 1992-1997

Subsector	Market Forecast (FF Millions)			
	1991	1992	1992-1997 CAGR (%)	1997
Equipment	1,620	1,950	12	3,440
Application Software	130	170	25	520
System Software	120	150	20	370
Professional Services	2,200	2,500	18	5,700
Other	70	80	15	160
<b>Total (Rounded)</b>	<b>4,150</b>	<b>4,850</b>	<b>16</b>	<b>10,200</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.



The leading systems integration vendors in France are listed in Exhibit IV-2.

## EXHIBIT IV-2

### Leading Systems Integration Vendors France, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (FF Millions)
1	Cap Gemini Sogeti	23	970
2	IBM	15	620
3	Sema Group	8	340
4	Andersen Consulting	7	285
5	Thomson	6	240
6	Alcatel	4	160
7	Steria	3	135
8	EDS-GFI	3	130
9	Axime	3	115
10	Sinorg	2	100
	Total Listed	75	3,095
	Total Market	100	4,150

Percents are rounded.

Cap Gemini Sogeti is the clear market leader in France. The company has a history of large project success with major organisations in France. Examples of such projects include the following:

- the SIT Interbank Clearing System
- the ARTERE remote control network for Electricité de France (EDF)

- the national telephone network management system for France Télécom
- the AIDCOMER support system for the French navy.

Cap Gemini Sogeti is continuing to develop its presence within major accounts to further strengthen the company's presence in the systems integration market. The company is doing this via an International Accounts Programme whereby senior Cap Gemini Sogeti executives are responsible for targeting 30 key multinationals. Closer links with Gemini Consulting are also being developed to leverage their business process re-engineering expertise in key accounts.

Profiles of Cap Gemini Sogeti and Gemini Consulting are provided in the report *Systems Integration Vendor Analysis, Europe, 1992*.

## B

### Germany - The Major Opportunity

The level of growth in Germany is forecast to be the highest among the major European countries over the period 1992-1997 as shown in Exhibit IV-3.

EXHIBIT IV-3

#### Systems Integration Market, Germany, 1992-1997

Subsector	Market Forecast (DM Millions)			
	1991	1992	1992-1997 CAGR (%)	1997
Equipment	560	650	18	1,500
Application Software	50	65	25	200
System Software	40	50	23	140
Professional Services	650	800	24	2,370
Other	30	35	21	90
<b>Total (Rounded)</b>	<b>1,330</b>	<b>1,600</b>	<b>22</b>	<b>4,300</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

This results from the combination of two factors: the continuing need to rebuild much of the infrastructure in the East together with the country's resilience to the recession affecting much of Europe.

There remains considerable activity in the manufacturing sector in Germany, where many of the leading systems integration vendors site their manufacturing sector centres of excellence. Another stimulant to the market is the continuing success of SAP, whose manufacturing application software products form the basis of many integrated manufacturing systems.

Examples of recent systems integration projects in Germany include the following:

- the AIRPAS reservation system developed for Lufthansa by Sema Group
- the Rhine-Ruhr urban transportation system developed by Cap Gemini Sogeti
- the freight management systems developed for Deutsche Bundesbahn by CSC Computer Sciences Corporation.

The leading systems integration vendors in Germany are listed in Exhibit IV-4.

## EXHIBIT IV-4

### Leading Systems Integration Vendors, Germany, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (DM Millions)
1	IBM	11	150
2	Siemens Nixdorf	10	130
3 =	Andersen Consulting	3	45
3 =	Bull	3	45
5	Cap Gemini Sogeti	3	40
6	Ploenzke	2	30
7	Ferranti	2	25
8 =	Debis Systemhaus	2	20
8 =	Digital	2	20
10	EDS	1	10
	Total Listed	39	515
	Total Market	100	1,330

Percents are rounded.

Groupe Bull is particularly successful in Germany where the company's systems integration unit concentrates on new business. Conversely, Germany is one of Andersen Consulting's less successful systems integration markets.

The activity of the systems vendors seems likely to increase in Germany over the next five years. Germany is already Hewlett-Packard's most successful European systems integration market, and



Siemens Nixdorf Informationssysteme will increase its emphasis on systems integration over the next few years.

Profiles of Groupe Bull and Hewlett-Packard are provided in the report *Systems Integration Vendor Analysis, Europe, 1992*.

## C

### United Kingdom - Private Sector Impacted by Recession

Growth in the private sector systems integration market in the United Kingdom has been adversely impacted by the depth of the recession. The forecast for the systems integration market in the United Kingdom over the next five years is shown in Exhibit IV-5.

EXHIBIT IV-5

#### Systems Integration Market, United Kingdom, 1992-1997

Subsector	Market Forecast (£ Millions)			
	1991	1992	1992-1997 CAGR (%)	1997
Equipment	155	165	11	280
Application Software	17	20	25	50
System Software	11	12	16	25
Professional Services	250	290	15	580
Other	12	13	10	20
<b>Total (Rounded)</b>	<b>445</b>	<b>500</b>	<b>14</b>	<b>955</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

Recently the systems integration market in the United Kingdom has been more dependent on the public sector than other national systems integration markets in Europe. Examples of recent public sector projects include

- a 10-year, \$800 million project to modernise the Royal Air Force's IS systems. Computer Sciences Corporation has already been awarded a consultancy assignment valued at \$25 million.
- ICL's ongoing involvement with the MoD CHOTS project.

- The Department of Social Security's Operational Terminal Strategy.
- A criminal information system for Kent police.

The leading systems integration vendors in the United Kingdom are listed in Exhibit IV-6.

EXHIBIT IV-6

### Leading Systems Integration Vendors United Kingdom, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (£ Millions)
1	Andersen Consulting	13	60
2	IBM	11	50
3	BT Customer Systems	10	45
4	CGS/Hoskyns	8	35
5	Sema Group	7	33
6	Logica	7	30
7	ICL	6	27
8	Data Sciences	6	25
9	EDS-Scicon	4	20
10	Bull	3	15
	Total Listed	76	340
	Total Market	100	445

Percents are rounded.

Profiles of Andersen Consulting, BT Customer Systems, ICL and Data Sciences are provided in the report *Systems Integration Vendor Analysis, Europe, 1992*.

**D****Italy - Groupe Bull Demonstrates the Possibilities**

The forecast for the systems integration market in Italy is shown in Exhibit IV-7.

EXHIBIT IV-7

**Systems Integration Market, Italy, 1992-1997**

Subsector	Market Forecast (Lira Billions)			
	1991	1992	1992-1997 (CAGR %)	1997
Equipment	135	160	13	300
Application Software	15	20	22	55
System Software	10	12	17	25
Professional Services	190	235	19	560
Other	10	11	15	22
<b>Total (Rounded)</b>	<b>360</b>	<b>440</b>	<b>17</b>	<b>960</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

Despite the impact of the recession, Italy shows considerable systems integration potential. Groupe Bull has been one of the vendors to demonstrate this. In Italy, Groupe Bull has its most advanced systems integration business unit in Europe. Exhibit IV-8 shows the leading systems integration vendors in Italy.

EXHIBIT IV-8

### Leading Systems Integration Vendors Italy, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (Lira Billions)
1	IBM	15	55
2	Olivetti	14	50
2 =	Andersen Consulting	14	50
4	Bull	11	38
5	Cap Gemini Sogeti	7	25
6	Finsiel	6	20
7	Logica	4	15
8 =	Datitalia	3	10
8 =	S&M Group	3	10
8 =	Siemens Nixdorf	3	10
	Total Listed	79	283
	Total Market	100	360

Percents are rounded.

E

Sweden

EXHIBIT IV-9

**Systems Integration Market, Sweden, 1992-1997**

Subsector	Market Forecast (SK Millions)			
	1991	1992	1992-1997 (CAGR %)	1997
Equipment	130	150	10	240
Application Software	13	16	21	40
System Software	11	13	15	26
Professional Services	190	230	16	485
Other	5	6	15	12
<b>Total (Rounded)</b>	<b>350</b>	<b>415</b>	<b>14</b>	<b>800</b>

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.



EXHIBIT IV-10

### Leading Systems Integration Vendors Sweden, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (SK Millions)
1	Cap Gemini Sogeti	36	125
2	IBM	26	90
3	Ericsson	11	40
4	Logica	6	22
5	Sapia	6	20
	Total Listed	85	297
	Total Market	100	350

Percents are rounded.

**F****Denmark**

EXHIBIT IV-11

**Systems Integration Market, Denmark, 1992-1997**

	Market Forecast (DK Millions)			
Subsector	1991	1992	1992-1997 (CAGR %)	1997
Equipment	100	110	9	170
Application Software	9	11	22	30
System Software	6	7	16	15
Professional Services	130	155	13	290
Other	5	7	12	12
<b>Total (Rounded)</b>	<b>250</b>	<b>290</b>	<b>12</b>	<b>520</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT IV-12

### Leading Systems Integration Vendors Denmark, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (DK Millions)
1	IBM	24	60
2	Computer Resources International	20	50
3	Kommunedata	16	40
4	Cap Gemini Sogeti	8	20
5	Unisys	6	15
	Total Listed	74	185
	Total Market	100	250

Percents are rounded.

## G

## Norway

EXHIBIT IV-13

**Systems Integration Market, Norway, 1992-1997**

	Market Forecast (NK Millions)			
Subsector	1991	1992	1992-1997 (CAGR %)	1997
Equipment	95	105	10	170
Application Software	9	11	22	30
System Software	6	7	23	20
Professional Services	136	160	16	330
Other	5	5	15	10
<b>Total (Rounded)</b>	<b>250</b>	<b>290</b>	<b>14</b>	<b>560</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT IV-14

### Leading Systems Integration Vendors Norway, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (NK Millions)
1	IBM	24	60
2	Andersen Consulting	8	20
3	Cap Gemini Sogeti	6	15
4	Bull	4	10
4 =	Unisys	4	10
	Total Listed	46	115
	Total Market	100	250

Percents are rounded.



## H

## Finland

EXHIBIT IV-15

**Systems Integration Market, Finland, 1992-1997**

Subsector	Market Forecast (FM Millions)			
	1991	1992	1992-1997 (CAGR %)	1997
Equipment	30	35	9	55
Application Software	3	4	20	10
System Software	2	2	15	5
Professional Services	35	40	11	67
Other	-	-	-	3
<b>Total (Rounded)</b>	<b>70</b>	<b>80</b>	<b>12</b>	<b>140</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT IV-16

### Leading Systems Integration Vendors Finland, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (FM Millions)
1 =	Nokia Data	21	15
1 =	Cap Gemini Sogeti	21	15
3 =	KT-Tietokesku	14	10
3 =	Tietotehdas	14	10
5	Unisys	7	5
	Total Listed	79	55
	Total Market	100	70

Percents are rounded.

## I

## Netherlands

EXHIBIT IV-17

**Systems Integration Market, Netherlands, 1992-1997**

Subsector	Market Forecast (Dfl Millions)			
	1991	1992	1992-1997 (CAGR %)	1997
Equipment	100	115	14	220
Application Software	12	15	25	45
System Software	8	9	20	22
Professional Services	130	155	20	380
Other	5	6	17	13
<b>Total (Rounded)</b>	<b>255</b>	<b>300</b>	<b>18</b>	<b>680</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT IV-18

### Leading Systems Integration Vendors Netherlands, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (Dfl Millions)
1	IBM	24	60
2	Cap Gemini Sogeti	22	55
3 =	Philips	8	20
3 =	BSO	8	20
5	Logica	7	17
6	Andersen Consulting	6	15
7	Siemens Nixdorf	4	10
8 =	Data Sciences	3	8
8 =	Bull	3	8
10	Unisys	2	5
	Total Listed	85	218
	Total Market	100	255

Percents are rounded.



**J****Belgium**

EXHIBIT IV-19

**Systems Integration Market, Belgium, 1992-1997**

	Market Forecast (BF Millions)			
Subsector	1991	1992	1992-1997 (CAGR %)	1997
Equipment	1,450	1,655	14	3,190
Application Software	125	148	25	450
System Software	115	130	20	320
Professional Services	1,850	2,185	20	5,440
Other	120	130	18	300
<b>Total (Rounded)</b>	<b>3,650</b>	<b>4,250</b>	<b>18</b>	<b>9,700</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT IV-20

### Leading Systems Integration Vendors Belgium, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (BF Millions)
1	Cap Gemini Sogeti	11	400
2	Sema Group	7	260
3	Logica	5	200
4	Bull	3	120
5	Andersen Consulting	3	100
	Total Listed	30	1,080
	Total Market	100	3,650

Percents are rounded.

**K****Switzerland**

EXHIBIT IV-21

**Systems Integration Market, Switzerland, 1992-1997**

	Market Forecast (SF Millions)			
Subsector	1991	1992	1992-1997 (CAGR %)	1997
Equipment	42	49	11	83
Application Software	4	5	23	14
System Software	2	2	20	6
Professional Services	50	60	18	140
Other	2	2	15	5
<b>Total (Rounded)</b>	<b>100</b>	<b>120</b>	<b>16</b>	<b>250</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT IV-22

### Leading Systems Integration Vendors Switzerland, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (SF Millions)
1	Andersen Consulting	12	12
2 =	Unisys	10	10
2 =	Cap Gemini Sogeti	10	10
4 =	Digital	5	5
4 =	Logica	5	5
	Total Listed	42	42
	Total Market	100	100

Percents are rounded.



**L****Austria**

EXHIBIT IV-23

**Systems Integration Market, Austria, 1992-1997**

Subsector	Market Forecast (Sch Millions)			
	1991	1992	1992-1997 (CAGR %)	1997
Equipment	180	205	12	360
Application Software	13	16	25	50
System Software	12	14	20	35
Professional Services	190	230	18	530
Other	5	6	15	12
<b>Total (Rounded)</b>	<b>400</b>	<b>470</b>	<b>16</b>	<b>990</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

EXHIBIT IV-24

### Leading Systems Integration Vendors Austria, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (Sch Millions)
1	IBM	20	80
2	Cap Gemini Sogeti	11	45
3	Digital	8	30
4	Unisys	6	25
5	Bull	3	10
	Total Listed	48	190
	Total Market	100	400

Percents are rounded.

**M****Spain**

EXHIBIT IV-25

**Systems Integration Market, Spain, 1992-1997**

Subsector	Market Forecast (Ptas Millions)			
	1991	1992	1992-1997 (CAGR %)	1997
Equipment	3,900	4,300	14	8,280
Application Software	300	360	27	1,190
System Software	300	330	23	930
Professional Services	4,900	6,000	20	14,700
Other	220	240	17	530
<b>Total (Rounded)</b>	<b>9,600</b>	<b>11,200</b>	<b>18</b>	<b>25,600</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

EXHIBIT IV-26

### Leading Systems Integration Vendors Spain, 1991

Rank	Company	Market Share (%)	1991 Estimated Revenues (Ptas Millions)
1	Andersen Consulting	42	4,000
2	IBM	21	2,000
3	Page Iberica	16	1,500
4	Sema Group	5	500
5	Cap Gemini Sogeti	4	400
	Total Listed	87	8,400
	Total Market	100	9,600

Percents are rounded.

N

## Portugal

EXHIBIT IV-27

**Systems Integration Market, Portugal, 1992-1997**

Subsector	Market Forecast (Esc Millions)			
	1991	1992	1992-1997 (CAGR %)	1997
Equipment	190	220	20	550
Application Software	14	18	30	67
System Software	13	16	27	53
Professional Services	230	290	25	900
Other	6	7	25	21
<b>Total (Rounded)</b>	<b>450</b>	<b>550</b>	<b>24</b>	<b>1,600</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.



## O

## Greece

EXHIBIT IV-28

**Systems Integration Market, Greece, 1992-1997**

	Market Forecast (Dra Millions)			
Subsector	1991	1992	1992-1997 (CAGR %)	1997
Equipment	545	600	15	1,200
Application Software	40	50	30	185
System Software	35	40	25	120
Professional Services	580	700	23	1,960
Other	6	7	20	17
<b>Total (Rounded)</b>	<b>1,200</b>	<b>1,400</b>	<b>20</b>	<b>3,480</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

**P****Ireland**

EXHIBIT IV-29

**Systems Integration Market, Ireland, 1992-1997**

	Market Forecast (IR £ Millions)			
Subsector	1991	1992	1992-1997 (CAGR %)	1997
Equipment	2	2	13	4
Application Software	-	-	-	1
System Software	-	-	-	1
Professional Services	2	3	18	7
Other	-	-	-	-
<b>Total (Rounded)</b>	<b>5</b>	<b>6</b>	<b>16</b>	<b>13</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## Q

## Eastern Europe

EXHIBIT IV-30

**Systems Integration Market, Eastern Europe, 1992-1997**

Subsector	Market Forecast (\$ Millions)			
	1991	1992	1992-1997 (CAGR %)	1997
Equipment	2	4	62	45
Application Software	1	1	82	20
System Software	1	1	72	15
Professional Services	2	4	77	70
Other	-	-	-	-
<b>Total (Rounded)</b>	<b>5</b>	<b>10</b>	<b>72</b>	<b>150</b>

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

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## A Systems Integration Market Forecasts in Local Currencies

### EXHIBIT A-1

#### France (FF Millions)

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	1,620	1,950	2,190	2,450	2,750	3,080	3,440	12
Application Software	130	170	210	260	330	410	510	25
System Software	120	150	180	220	260	310	370	20
Professional Services	2,200	2,500	2,950	3,480	4,110	4,850	5,700	18
Other	70	80	90	100	120	140	160	15
Systems Integration (Rounded)	4,150	4,850	5,600	6,500	7,550	8,800	10,200	16

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.



## EXHIBIT A-2

**Germany (DM Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	560	650	760	890	1,060	1,260	1,500	18
Application Software	50	65	80	100	130	160	200	25
System Software	40	50	60	70	90	110	140	23
Professional Services	650	800	990	1,220	1,520	1,890	2,370	24
Other	30	35	40	50	60	70	90	21
Systems Integration (Rounded)	1,350	1,600	1,950	2,350	2,850	3,500	4,300	22

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT A-3

**United Kingdom (£ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	155	165	185	205	225	250	280	11
Application Software	17	20	24	29	35	42	50	25
System Software	11	12	14	16	18	21	25	16
Professional Services	250	290	330	380	435	500	580	15
Other	12	13	14	15	16	18	20	10
Systems Integration (Rounded)	445	500	565	645	730	830	955	14

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT A-4

**Italy (Lira Billions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	135	155	175	200	230	260	300	13
Application Software	15	20	24	29	36	44	55	22
System Software	10	12	14	16	19	22	25	17
Professional Services	190	235	275	325	390	465	560	19
Other	10	12	13	15	17	19	22	13
Systems Integration (Rounded)	360	440	500	585	690	810	960	17

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT A-5

**Sweden (SK Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	130	150	165	185	200	215	240	10
Application Software	13	16	20	24	28	33	40	21
System Software	11	13	15	18	20	23	26	15
Professional Services	190	230	270	320	365	415	485	16
Other	5	6	7	8	9	10	11	15
Systems Integration (Rounded)	350	415	475	555	620	695	800	14

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT A-6

**Denmark (DK Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	100	110	120	135	150	160	170	9
Application Software	9	11	14	17	21	25	30	22
System Software	6	7	8	10	12	14	15	16
Professional Services	130	155	180	205	235	265	290	13
Other	5	7	8	9	10	11	12	12
Systems Integration (Rounded)	250	290	330	375	430	475	520	12

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT A-7

**Norway (NK Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	95	105	115	130	140	155	170	10
Application Software	9	11	14	17	21	26	30	22
System Software	6	7	9	11	13	16	20	23
Professional Services	135	160	185	215	245	285	330	16
Other	5	5	6	7	8	9	10	15
Systems Integration (Rounded)	250	290	330	380	425	490	560	14

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT A-8

**Finland (FM Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	30	35	38	41	45	49	55	9
Application Software	3	4	5	6	7	8	10	20
System Software	2	3	3	4	4	5	6	15
Professional Services	35	40	45	49	54	59	67	11
Other	0	0	0	1	1	2	3	-
Systems Integration (Rounded)	70	80	90	100	110	125	140	12

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT A-9

**Netherlands (Dfl Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	100	115	130	150	170	195	220	14
Application Software	12	15	19	24	29	36	45	25
System Software	8	9	12	14	16	19	22	20
Professional Services	130	155	185	225	265	315	380	20
Other	5	6	7	8	9	11	13	17
Systems Integration (Rounded)	255	300	355	420	490	575	680	18

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT A-10

**Belgium (BF Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	1,450	1,655	1,900	2,200	2,500	2,850	3,190	14
Application Software	125	148	195	240	300	370	450	25
System Software	115	130	170	205	245	290	320	19
Professional Services	1,850	2,185	2,650	3,200	3,870	4,640	5,440	20
Other	120	130	150	180	210	250	300	18
Systems Integration (Rounded)	3,650	4,250	5,050	6,050	7,150	8,400	9,700	18

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT A-11

**Switzerland (SF Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	42	49	54	60	67	74	83	11
Application Software	4	5	6	8	9	11	14	23
System Software	2	2	3	3	4	5	6	20
Professional Services	50	60	70	85	100	120	140	18
Other	2	2	3	4	4	5	5	15
Systems Integration (Rounded)	100	120	135	160	185	215	250	16

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.



## EXHIBIT A-12

**Austria (Sch Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	180	205	230	260	295	330	360	2
Application Software	13	16	20	25	32	40	50	25
System Software	12	14	17	20	24	29	35	20
Professional Services	190	230	275	325	385	455	530	18
Other	5	6	7	8	9	11	12	15
Systems Integration (Rounded)	400	470	550	640	745	865	990	16

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT A-13

**Spain (Ptas Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	3,900	4,300	4,950	5,700	6,400	7,300	8,280	14
Application Software	300	360	460	590	740	940	1,190	27
System Software	300	330	410	510	620	760	930	23
Professional Services	4,900	6,000	7,200	8,700	10,300	12,300	14,700	20
Other	220	240	280	330	380	450	530	17
Systems Integration (Rounded)	9,600	11,200	13,300	15,800	18,400	21,800	25,600	18

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT A-14

**Portugal (Esc Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	190	220	260	310	370	450	550	20
Application Software	14	18	23	30	39	52	67	30
System Software	13	16	20	25	32	41	53	27
Professional Services	230	290	360	440	550	700	900	25
Other	6	7	9	11	14	18	21	27
Systems Integration (Rounded)	450	550	670	820	1,010	1,260	1,600	24

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT A-15

**Greece (Dra Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	545	600	700	800	900	1,050	1,200	15
Application Software	40	50	65	85	110	145	185	30
System Software	35	40	50	65	80	100	120	25
Professional Services	580	700	850	1,050	1,300	1,600	1,960	23
Other	6	7	8	10	12	14	20	17
Systems Integration (Rounded)	1,200	1,400	1,650	2,000	2,400	2,900	3,480	20

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT A-16

**Ireland (IR £ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	2	2	2	3	3	3	4	13
Application Software	0	0	1	1	1	1	1	-
System Software	0	0	0	0	0	0	1	0
Professional Services	2	3	3	4	4	5	7	18
Other	0	0	0	0	0	0	0	0
Systems Integration (Rounded)	5	6	7	8	9	10	13	16

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

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## B Systems Integration Market Forecasts in U.S. Dollars

### EXHIBIT B-1

### Europe (\$ Millions)

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	1,350	1,550	1,770	2,010	2,300	2,640	3,030	14
Application Software	130	165	200	250	315	385	485	24
System Software	100	115	140	170	205	245	300	21
Professional Services	1,830	2,160	2,570	3,060	3,650	4,360	5,250	19
Other	80	90	100	115	130	155	180	15
Systems Integration (Rounded)	3,500	4,100	4,800	5,600	6,600	7,800	9,250	18

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.



## EXHIBIT B-2

**France (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	310	380	420	470	530	590	660	12
Application Software	25	33	41	50	64	79	98	25
System Software	23	29	35	42	50	60	71	20
Professional Services	420	480	570	670	790	940	1,100	18
Other	14	15	17	19	23	27	31	15
Systems Integration (Rounded)	800	940	1,080	1,250	1,460	1,700	1,970	16

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT B-3

**Germany (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	370	430	500	590	700	830	990	18
Application Software	33	43	53	66	86	105	132	25
System Software	26	33	39	46	59	72	92	23
Professional Services	430	530	650	800	1,000	1,240	1,560	24
Other	20	23	26	33	39	46	59	21
Systems Integration (Rounded)	890	1,050	1,280	1,550	1,880	2,300	2,830	22

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT B-4

**United Kingdom (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	290	310	350	390	420	470	530	11
Application Software	32	38	45	55	66	79	96	25
System Software	21	23	26	30	34	39	47	16
Professional Services	470	550	620	710	820	940	1,090	15
Other	23	24	26	28	30	34	38	10
Systems Integration (Rounded)	840	940	1,060	1,210	1,370	1,560	1,800	14

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT B-5

**Italy (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	120	130	150	170	200	230	260	13
Application Software	13	17	21	25	31	38	47	22
System Software	9	10	12	14	17	19	23	17
Professional Services	170	200	240	280	340	400	490	19
Other	9	10	11	13	15	17	19	13
Systems Integration (Rounded)	310	370	430	510	600	700	830	17

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT B-6

**Sweden (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	24	27	30	34	36	39	44	10
Application Software	2	3	4	4	5	6	7	21
System Software	2	2	3	3	4	4	5	15
Professional Services	35	42	49	58	66	75	88	16
Other	1	1	1	1	2	2	2	15
Systems Integration (Rounded)	63	75	86	100	112	126	145	14

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT B-7

**Denmark (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	17	19	21	23	26	27	29	9
Application Software	2	2	2	3	4	4	5	22
System Software	1	1	1	2	2	2	3	16
Professional Services	22	27	31	35	40	45	49	13
Other	1	1	1	2	2	2	2	12
Systems Integration (Rounded)	43	50	56	64	73	81	90	12

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT B-8

**Norway (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	16	18	19	22	24	26	29	10
Application Software	2	2	2	3	4	4	5	22
System Software	1	1	2	2	2	3	3	23
Professional Services	23	27	31	36	41	48	55	16
Other	1	1	1	1	1	2	2	15
Systems Integration (Rounded)	42	50	55	64	71	82	95	14

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT B-9

**Finland (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	7	8	9	10	11	12	14	9
Application Software	1	1	1	1	2	2	2	20
System Software	1	1	1	1	1	1	1	15
Professional Services	9	10	11	12	13	14	16	11
Other	0	0	0	0	0	1	1	-
Systems Integration (Rounded)	17	20	22	24	27	30	34	12

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT B-10

**Netherlands (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	59	68	76	88	100	114	129	14
Application Software	7	9	11	14	17	21	26	25
System Software	5	6	7	8	9	11	13	20
Professional Services	76	91	108	132	155	184	222	20
Other	3	4	4	5	5	6	7	17
Systems Integration (Rounded)	149	176	208	246	287	337	400	18

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT B-11

**Belgium (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	47	53	61	71	80	91	103	14
Application Software	4	5	6	8	10	12	14	25
System Software	4	5	5	7	8	9	11	20
Professional Services	59	70	85	103	124	149	175	20
Other	4	4	5	6	7	8	9	18
Systems Integration (Rounded)	117	135	162	194	229	269	312	18

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.



## EXHIBIT B-12

**Switzerland (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	31	35	40	45	50	55	61	11
Application Software	3	4	4	6	7	8	10	23
System Software	2	2	2	2	3	3	4	20
Professional Services	37	45	52	63	74	89	104	18
Other	2	2	2	3	3	3	4	15
Systems Integration (Rounded)	74	85	100	119	137	160	182	16

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT B-13

**Austria (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	17	20	22	25	28	31	35	12
Application Software	1	2	2	2	3	4	5	25
System Software	1	1	2	2	2	3	3	20
Professional Services	18	22	26	31	36	43	50	18
Other	0	1	1	1	1	1	1	15
Systems Integration (Rounded)	38	45	52	60	70	82	93	16

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT B-14

**Spain (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	41	45	52	60	67	76	87	14
Application Software	3	4	5	6	8	10	12	27
System Software	3	3	4	5	6	8	10	23
Professional Services	51	63	75	91	107	128	153	20
Other	2	3	3	3	4	5	6	17
Systems Integration (Rounded)	100	117	139	164	192	227	267	18

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT B-15

**Portugal (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	1	2	2	2	3	3	4	20
Application Software	0	0	0	0	0	0	1	30
System Software	0	0	0	0	0	0	0	27
Professional Services	2	2	3	3	4	5	7	25
Other	0	0	0	0	0	0	0	27
Systems Integration (Rounded)	3	4	5	6	8	9	12	24

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT B-16

**Greece (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	3	3	4	5	5	6	7	15
Application Software	0	0	0	0	1	1	1	30
System Software	0	0	0	0	0	1	1	25
Professional Services	3	4	5	6	8	9	11	23
Other	0	0	0	0	0	0	0	17
Systems Integration (Rounded)	7	8	10	12	14	17	20	20

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT B-17

**Ireland (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	3	4	4	5	5	6	7	13
Application Software	1	1	1	1	1	2	2	-
System Software	1	1	1	1	1	1	1	0
Professional Services	4	4	5	6	8	9	11	18
Other	0	0	0	0	0	0	0	0
Systems Integration (Rounded)	8	10	11	13	15	18	20	16

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT B-18

**Eastern Europe (\$ Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	2	4	7	11	17	29	45	62
Application Software	1	1	2	4	7	12	20	82
System Software	1	1	2	3	5	8	15	72
Professional Services	2	4	7	12	21	40	70	77
Other	0	0	0	0	0	0	0	0
Systems Integration (Rounded)	5	10	15	30	50	90	150	72

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## C Systems Integration Market Forecasts in ECUs

EXHIBIT C-1

### Europe (ECU Millions)

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	1,010	1,150	1,320	1,500	1,710	1,960	2,260	14
Application Software	95	120	150	185	235	295	380	24
System Software	70	90	105	125	155	185	235	21
Professional Services	1,360	1,610	1,910	2,280	2,730	3,280	3,980	19
Other	60	65	75	85	100	115	140	15
Systems Integration (Rounded)	2,600	3,050	3,550	4,200	4,900	5,850	7,000	18

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-2

**France (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	230	280	310	350	400	440	490	12
Application Software	19	24	30	37	47	59	73	25
System Software	17	22	26	32	37	45	53	20
Professional Services	320	360	420	500	590	700	820	18
Other	10	11	13	14	17	20	23	15
Systems Integration (Rounded)	600	700	800	930	1,080	1,260	1,470	16

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-3

**Germany (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	270	320	370	440	520	620	740	18
Application Software	25	32	39	49	64	78	98	25
System Software	20	25	29	34	44	54	69	23
Professional Services	320	390	490	600	750	930	1,160	24
Other	15	17	20	25	29	34	44	21
Systems Integration (Rounded)	660	780	960	1,150	1,400	1,720	2,110	22

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.



## EXHIBIT C-4

**United Kingdom (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	220	230	260	290	310	350	390	11
Application Software	24	28	34	41	49	59	71	25
System Software	15	17	20	22	25	29	35	16
Professional Services	350	410	460	530	610	700	810	15
Other	17	18	20	21	22	25	28	10
Systems Integration (Rounded)	620	700	790	900	1,020	1,160	1,340	14

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-5

**Italy (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	90	100	110	130	150	170	190	13
Application Software	10	13	16	19	23	28	35	22
System Software	6	8	9	10	12	14	17	17
Professional Services	120	150	180	210	250	300	360	19
Other	6	8	8	10	11	12	14	13
Systems Integration (Rounded)	230	280	320	380	450	520	620	17

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-6

**Sweden (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	18	20	22	25	27	29	32	10
Application Software	2	2	3	3	4	4	5	21
System Software	2	2	2	2	3	3	4	15
Professional Services	26	31	36	43	49	56	65	16
Other	1	1	1	1	1	1	2	15
Systems Integration (Rounded)	47	56	64	75	83	94	108	14

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-7

**Denmark (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	13	14	15	17	19	20	22	9
Application Software	1	1	2	2	3	3	4	22
System Software	1	1	1	1	2	2	2	16
Professional Services	17	20	23	26	30	34	37	13
Other	1	1	1	1	1	1	2	12
Systems Integration (Rounded)	32	37	42	48	54	60	66	12

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-8

## Norway (ECU Millions)

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	12	13	15	16	18	20	21	10
Application Software	1	1	2	2	3	3	4	22
System Software	1	1	1	1	2	2	2	23
Professional Services	17	20	23	27	31	36	41	16
Other	1	1	1	1	1	1	1	15
Systems Integration (Rounded)	31	36	41	48	53	61	70	14

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-9

## Finland (ECU Millions)

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	6	6	7	8	8	9	10	9
Application Software	1	1	1	1	1	1	2	20
System Software	0	0	1	1	1	1	1	15
Professional Services	7	8	8	9	10	11	12	11
Other	0	0	0	0	0	0	1	-
Systems Integration (Rounded)	13	15	17	18	20	23	26	12

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-10

**Netherlands (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	44	50	57	66	74	85	96	14
Application Software	5	7	8	11	13	16	20	25
System Software	4	4	5	6	7	8	10	20
Professional Services	57	68	81	99	116	138	166	20
Other	2	3	3	4	4	5	5	17
Systems Integration (Rounded)	112	131	155	184	214	251	297	18

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-11

**Belgium (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	35	40	46	53	60	68	77	14
Application Software	3	4	5	6	7	9	11	25
System Software	3	3	4	5	6	7	8	20
Professional Services	44	52	63	77	93	111	130	20
Other	3	3	4	4	5	6	7	18
Systems Integration (Rounded)	87	102	121	145	171	201	233	18

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-12

**Switzerland (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	23	26	30	33	37	41	46	11
Application Software	2	3	3	4	5	6	7	23
System Software	1	1	1	2	2	3	3	20
Professional Services	28	33	39	47	55	67	78	18
Other	1	1	2	2	2	3	3	15
Systems Integration (Rounded)	55	64	75	89	102	119	136	16

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-13

**Austria (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	13	15	16	18	21	23	26	12
Application Software	1	1	1	2	2	3	4	25
System Software	1	1	1	1	2	2	2	20
Professional Services	14	16	19	23	27	32	37	18
Other	0	0	1	1	1	1	1	15
Systems Integration (Rounded)	28	33	39	45	52	61	69	16

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.



## EXHIBIT C-14

**Spain (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	30	33	38	44	50	57	64	14
Application Software	2	3	4	5	6	7	9	27
System Software	2	3	3	4	5	6	7	23
Professional Services	38	47	56	67	80	95	114	20
Other	2	2	2	3	3	3	4	17
Systems Integration (Rounded)	74	87	103	122	142	168	199	18

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-15

**Portugal (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	1	1	1	2	2	3	3	20
Application Software	0	0	0	0	0	0	0	30
System Software	0	0	0	0	0	0	0	27
Professional Services	1	2	2	2	3	4	5	25
Other	0	0	0	0	0	0	0	27
Systems Integration (Rounded)	3	3	4	5	6	7	9	24

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.



## EXHIBIT C-16

**Greece (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	2	3	3	3	4	5	5	15
Application Software	0	0	0	0	0	1	1	30
System Software	0	0	0	0	0	0	1	25
Professional Services	3	3	4	5	6	7	8	23
Other	0	0	0	0	0	0	0	17
Systems Integration (Rounded)	5	6	7	9	10	12	15	20

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-17

**Ireland (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	3	3	3	4	4	5	5	13
Application Software	1	1	1	1	1	1	1	-
System Software	0	0	0	0	0	0	0	0
Professional Services	3	3	4	5	6	7	8	18
Other	0	0	0	0	0	0	0	0
Systems Integration (Rounded)	6	7	9	10	11	13	15	16

Because of rounding, data may not add to totals.

CAGRs are calculated on pre-rounded values.

## EXHIBIT C-18

**Eastern Europe (ECU Millions)**

Subsector	1991	1992	1993	1994	1995	1996	1997	92-97 CAGR (%)
Equipment	2	3	5	8	13	21	34	62
Application Software	0	1	1	3	5	9	16	82
System Software	0	1	1	2	3	6	10	72
Professional Services	2	3	5	9	16	30	53	77
Other	0	0	0	0	0	0	0	0
Systems Integration (Rounded)	4	8	11	22	37	67	112	72

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## **D**

### **Forecast Reconciliation**

Exhibit D-1 shows the reconciliation for Europe as a whole between the 1991 and 1992 forecasts. Exhibits D-2 to D-17 show the reconciliations for each country individually. No forecast for Eastern Europe was provided in 1991.

While minor adjustments have been made to individual forecasts for 1991, these figures remain broadly in line with those published last year. The variance of 4% shown in Exhibit D-1 is accounted for by differences in the exchange rates used.

The overall growth rate forecast has been reduced from 19% to 18%, reflecting the impact of the economic downturn on the market. In some countries, for example, France and Italy, growth rates have been revised downwards significantly, reflecting the continuing deterioration in trading conditions.

## EXHIBIT D-1

**Europe (\$ Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	1,290	1,350	60	5	2,600	2,640	40	2	15	14
Application Software	123	130	7	6	407	385	-22	-5	27	24
System Software	94	100	6	6	240	245	5	2	21	21
Professional Services	1,760	1,830	70	4	4,570	4,360	-210	-5	21	19
Other	75	80	5	7	160	155	-5	-3	16	15
Systems Integration (Rounded)	3,350	3,500	150	4	8,000	7,800	-200	-3	19	18

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-2

**France (FF Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	1,620	1,620	0	0	3,300	3,080	-220	-7	15	12
Application Software	130	130	0	0	480	410	-70	-15	30	25
System Software	120	120	0	0	350	310	-40	-11	24	20
Professional Services	2,200	2,200	0	0	5,960	4,850	-1,110	-19	22	18
Other	70	70	0	0	210	140	-70	-33	25	15
Systems Integration (Rounded)	4,140	4,150	10	0	10,300	8,800	-1,500	-15	20	16

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-3

**Germany (DM Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	560	560	0	0	1,200	1,260	60	5	16	18
Application Software	50	50	0	0	180	160	-20	-11	29	25
System Software	40	40	0	0	100	110	10	10	20	23
Professional Services	650	650	0	0	1,900	1,890	-10	-1	24	24
Other	30	30	0	0	70	70	0	0	18	21
Systems Integration (Rounded)	1,330	1,350	20	2	3,450	3,500	50	1	21	22

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-4

**United Kingdom (£ Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	155	155	0	0	280	250	-30	-11	13	11
Application Software	17	17	0	0	50	42	-8	-16	24	25
System Software	11	11	0	0	25	21	-4	16	18	16
Professional Services	255	250	-5	-2	540	500	-40	-7	16	15
Other	12	12	0	0	18	18	0	0	8	10
Systems Integration (Rounded)	450	445	-5	-1	915	830	-85	-9	15	14

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.



## EXHIBIT D-5

## Italy (Lira Billions)

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	135	135	0	0	290	260	-30	-10	17	13
Application Software	15	15	0	0	45	44	-1	-2	25	22
System Software	10	10	0	0	20	22	2	10	15	17
Professional Services	190	190	0	0	600	465	-135	-23	26	19
Other	10	10	0	0	20	19	-1	-5	15	13
Systems Integration (Rounded)	360	360	0	0	975	810	-165	-17	22	17

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-6

## Sweden (SK Millions)

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	130	130	0	0	230	215	-15	-7	12	10
Application Software	13	13	0	0	45	33	-12	-27	28	21
System Software	11	11	-	-	25	23	-2	-8	18	15
Professional Services	190	190	0	0	460	415	-45	-10	19	16
Other	5	5	0	0	10	10	0	0	15	15
Systems Integration (Rounded)	350	350	0	0	770	695	-75	-10	17	14

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.



## EXHIBIT D-7

**Denmark (DK Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	100	100	0	0	170	160	-10	-6	11	9
Application Software	9	9	0	0	28	25	-3	-11	25	22
System Software	6	6	0	0	17	14	-3	-18	23	16
Professional Services	130	130	0	0	325	265	-60	-18	20	13
Other	5	5	0	0	10	11	1	10	15	12
Systems Integration (Rounded)	250	250	0	0	550	475	-75	-14	17	12

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-8

**Norway (NK Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	100	95	-5	-5	190	155	-35	-18	14	10
Application Software	9	9	0	0	37	26	-11	-30	33	22
System Software	6	6	0	0	18	16	-2	11	25	23
Professional Services	140	135	-5	-4	310	285	-25	-8	17	16
Other	5	5	0	0	10	9	-1	-10	15	15
Systems Integration (Rounded)	260	250	-10	-4	565	490	-75	-13	17	14

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-9

**Finland (FM Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	30	30	0	0	50	49	-1	-2	11	9
Application Software	3	3	0	0	7	8	1	14	18	20
System Software	2	2	0	0	5	5	0	0	20	15
Professional Services	40	35	-5	-13	85	59	-26	-31	16	11
Other	0	0	0	0	3	2	-1	-33	0	-
Systems Integration (Rounded)	75	70	-5	-7	150	125	-25	-17	15	12

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-10

**Netherlands (Dfl Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	100	100	0	0	200	195	-5	-3	15	14
Application Software	12	12	0	0	35	36	1	3	24	25
System Software	8	8	0	0	25	19	-6	-24	26	20
Professional Services	135	130	-5	-4	330	315	-15	-5	20	20
Other	5	5	0	0	10	11	1	5	15	17
Systems Integration (Rounded)	260	255	-5	-2	600	575	-25	-4	18	18

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-11

**Belgium (BF Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	1,500	1,450	-50	-3	3,150	2,850	-300	-10	16	14
Application Software	125	125	0	0	450	370	-80	-18	29	25
System Software	125	115	-10	-8	250	290	40	16	15	20
Professional Services	1,970	1,850	-120	-6	4,750	4,640	-110	-2	19	20
Other	120	120	0	0	200	250	50	25	11	18
Systems Integration (Rounded)	3,800	3,650	-150	-4	8,800	8,400	-400	-5	18	18

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-12

**Switzerland (SF Million)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	42	42	0	0	90	74	-16	-18	16	11
Application Software	4	4	0	0	12	11	-1	-8	25	23
System Software	2	2	0	0	8	5	-4	-44	32	20
Professional Services	50	50	0	0	120	120	0	0	19	18
Other	2	2	0	0	5	5	-1	-10	20	15
Systems Integration (Rounded)	100	100	0	0	235	215	-20	-9	19	16

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-13

**Austria (Sch Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	180	180	0	0	390	330	-60	-15	17	12
Application Software	13	13	0	0	48	40	-8	-17	30	25
System Software	12	12	0	0	32	29	-3	-9	22	20
Professional Services	190	190	0	0	520	455	-65	-13	22	18
Other	5	5	0	0	10	11	1	10	15	15
Systems Integration (Rounded)	400	400	0	0	1,000	865	-135	-14	20	16

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-14

**Spain (Ptas Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	3,900	3,900	0	0	8,000	7,300	-700	-9	15	14
Application Software	300	300	0	0	1,050	940	-110	-10	28	27
System Software	300	300	0	0	960	760	-190	-20	26	23
Professional Services	4,900	4,900	0	0	14,500	12,300	-2,200	-15	24	20
Other	220	220	0	0	500	450	-50	-10	18	17
Systems Integration (Rounded)	9,600	9,600	0	0	25,000	21,800	-3,200	-13	21	18

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.



## EXHIBIT D-15

**Portugal (Esc Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	190	190	0	0	430	450	20	5	18	20
Application Software	14	14	0	0	50	52	2	4	29	30
System Software	13	13	0	0	35	41	6	17	22	27
Professional Services	230	230	0	0	790	700	-90	-11	28	25
Other	6	6	0	0	12	18	5	50	15	27
Systems Integration (Rounded)	450	450	0	0	1,320	1,260	-60	-5	24	24

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-16

**Greece (Dra Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	545	545	0	0	1,200	1,050	-150	-13	17	15
Application Software	40	40	0	0	150	145	-5	-3	30	30
System Software	35	35	0	0	85	100	15	18	19	25
Professional Services	580	580	0	0	2,150	1,600	-550	-26	30	23
Other	6	6	0	0	12	14	2	17	15	17
Systems Integration (Rounded)	1,200	1,200	0	0	3,600	2,900	-700	-19	25	20

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.

## EXHIBIT D-17

**Ireland (IR £ Millions)**

	1991 Market				1996 Market					
Subsector	1991 Report (Fcst)	1992 Report (Act)	Variance	Variance (%)	1991 Report (Fcst)	1992 Report (Fcst)	Variance	Variance (%)	91 Rpt 91-96 CAGR (Fcst %)	92 Rpt 92-97 CAGR (Fcst %)
Equipment	2	2	0	0	3	3	1	19	9	13
Application Software	0	0	0	0	1	1	0	12	-	15
System Software	0	0	0	0	1	0	0	-40	11	0
Professional Services	2	2	0	0	5	5	0	4	18	18
Other	0	0	0	0	0	0	0	-67	25	0
Systems Integration (Rounded)	5	5	0	-4	9	10	1	10	14	16

Because of rounding, data may not add to totals.  
CAGRs are calculated on pre-rounded values.



## E Economic Assumptions

### EXHIBIT E-1

### U.S. Dollar and ECU Exchange Rates, 1992

Country	Currency	U.S. Dollar	ECU
Europe	\$	1	0.745
France	FF	5.18	6.96
Germany	DM	1.52	2.04
United Kingdom	PS	0.532	0.715
Italy	Lira	1,150	1,544
Sweden	SK	5.54	7.45
Denmark	DK	5.89	7.93
Norway	NK	5.98	8.03
Finland	FM	4.15	5.51
Netherlands	Dfl	1.71	2.29
Belgium	BF	31.26	41.94
Switzerland	SF	1.35	1.81
Austria	Sch	10.63	14.33
Spain	Ptas	96.2	129.6
Portugal	Esc	134.9	181
Greece	Dra	174	234.8
Ireland	IP	0.57	0.765
Eastern Europe	\$	1	0.745

Source: *Financial Times*, 30 December 1991

## EXHIBIT E-2

**Inflation Assumptions 1991 and 1992**

Country	Assumption 1991-1996	Assumption 1992-1997	Change
France	3.0	2.7	-0.3
Germany	2.7	3.9	1.2
United Kingdom	4.8	3.7	-1.1
Italy	4.4	5.2	0.8
Sweden	6.3	4.0	-2.3
Denmark	2.7	2.4	-0.3
Norway	4.9	3.4	-1.5
Finland	5.0	1.4	-3.6
Netherlands	2.4	3.3	0.9
Belgium	3.3	3.2	-0.1
Switzerland	3.3	3.5	0.2
Austria	2.6	3.2	0.6
Spain	4.7	5.0	0.3
Portugal	8.0	12.5	4.5
Greece	12.0	11.0	-1.0
Ireland	3.0	3.0	0.0
Eastern Europe	-	-	-
European Average	4.0	4.2	0.2







